

AMENDMENTS TO THE CLAIMS

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (New) A solid multicomponent membrane for use in a reactor wherein the membrane comprises a mixed metal oxide having a structure represented by the formula:



wherein x, y, y', w, v and d each represent a number such that $0.1 \leq (y+y') \leq 0.8$, $0.15 \leq (x+y') \leq 0.95$, $0.05 \leq (x-y) \leq 0.3$, $0.95 \leq w < 1$, $v = 1$, $y' > 0$ and d equals a number that renders the compound charge neutral and is not less than zero and not greater than about 0.8.

9. (New) The membrane according to claim 8, wherein the x, y, y', w, and d each represent a number such that $0.15 < (y+y') < 0.75$, $0.2 < (x + y') < 0.9$, $0.05 < (x-y) < 0.15$, $0.95 < w < 1$, and d equals a number that renders the compound charge neutral and is not less than zero and not greater than about 0.8.

10. (New) The membrane according to claim 8, wherein $0 < y < 0.75$ and $0 < y' < 0.3$.

11. (New) In a membrane reactor for generating heat by oxidation of a carbon containing fuel to CO_2 and H_2O on the oxidation side of the membrane reactor, the improvement which comprises employing a membrane reactor containing the membrane of claim 8.

12. (New) In a method for generating synthesis gas consisting of one or more of the components CO , CO_2 , H_2 and N_2 in a membrane reactor where the reactor is capable of reacting a mixture of steam and a carbon containing fuel with oxygen permeated through said membrane to make synthesis gas, the improvement which comprises employing a membrane reactor containing the membrane of claim 8.